CLAIMS:

1. A non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend produced by the method comprising:

in a first step, forming a fire retardant mixture comprising a non-halogenated fire retardant, poly(arylene ether) resin, and a polystyrene resin essentially free of plasticizer by intimately mixing in melt;

in a second step, forming a non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend by intimately mixing in melt the fire retardant mixture with a blowing agent; and

in a third step, expanding the non-halogenated, fire retardant, expandable poly(arylene ether)/polystyrene blend.

2. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1 wherein the blend produces a sound level less than or equal to about 60 decibels when the skin surface of a 2.5 cubic centimeter sample is rubbed across a clear coated test panel with a constant pressure of about 2-2.5 kilo Pascals.

3. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

4. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

5. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

6. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1 wherein the fire retardant mixture further comprises a nucleating agent.

7. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1, wherein the fire retardant mixture further comprises an impact modifier.

8. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1, wherein the non-halogenated fire retardant comprises butylated triphenyl phosphate ester, resorcinol tetraphenyl diphosphate, bis-phenol A tetraphenyl diphosphate, or a mixture of two or more of the foregoing.

9. The non-halogenated, fire retardant, expanded poly (arylene ether)/polystyrene blend of Claim 1, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

10. An expanded poly(arylene ether)/polystyrene blend produced by the method comprising:

in a first step, forming a first mixture comprising poly(arylene ether) resin, and polystyrene resin essentially free of plasticizer by intimately mixing in melt;

in a second step forming an expandable poly(arylene ether)/polystyrene blend by intimately mixing in melt the first mixture with a blowing agent; and

in a third step, expanding the expandable poly(arylene ether)/polystyrene blend.

11. The expanded poly (arylene ether)/polystyrene blend of Claim 10 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

12. The expanded poly (arylene ether)/polystyrene blend of Claim 10 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

13. The expanded poly (arylene ether)/polystyrene blend of Claim 10 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

14. The expanded poly (arylene ether)/polystyrene blend of Claim 10 wherein the first mixture further comprises a nucleating agent.

15. The expanded poly (arylene ether)/polystyrene blend of Claim 10, wherein the first mixture further comprises an impact modifier.

16. The expanded poly (arylene ether)/polystyrene blend of Claim 10, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

17. An expandable poly(arylene ether)/polystyrene blend comprising poly(arylene ether) resin, polystyrene resin essentially free of plasticizer, a nucleating agent and blowing agent.

18. The expandable poly (arylene ether)/polystyrene blend of Claim 17 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

19. The expandable poly (arylene ether)/polystyrene blend of Claim 17 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

20. The expandable poly (arylene ether)/polystyrene blend of Claim 17 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

21. The expandable poly (arylene ether)/polystyrene blend of Claim 17, further comprising an impact modifier.

22. The expandable poly (arylene ether)/polystyrene blend of Claim 17, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

23. A non-halogenated, fire retardant, expandable poly(arylene ether)/polystyrene blend comprising poly(arylene ether) resin, polystyrene resin essentially free of plasticizer, a non-halogenated fire retardant, a nucleating agent and blowing agent.

24. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 23 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

25. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 23 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

26. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 23 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

27. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 23, further comprising an impact modifier.

28. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 23, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

29. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 23, wherein the non-halogenated fire retardant comprises butylated triphenyl phosphate ester, resorcinol tetraphenyl diphosphate, bis-phenol A tetraphenyl diphosphate, or a mixture of two or more of the foregoing

30. An expandable poly(arylene ether)/polystyrene blend produced by the method comprising:

in a first step, forming a first mixture comprising poly(arylene ether) resin and polystyrene resin essentially free of plasticizer, by intimately mixing in melt; and

in a second step forming an expandable poly(arylene ether)/polystyrene blend by intimately mixing in melt the first mixture with a blowing agent.

31. The expandable poly (arylene ether)/polystyrene blend of Claim 30 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

32. The expandable poly (arylene ether)/polystyrene blend of Claim 30 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

33. The expandable poly (arylene ether)/polystyrene blend of Claim 30 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

34. The expandable poly (arylene ether)/polystyrene blend of Claim 30, further comprising an impact modifier.

35. The expandable poly (arylene ether)/polystyrene blend of Claim 30, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

36. The expandable poly (arylene ether)/polystyrene blend of Claim 30 wherein the first mixture further comprises a nucleating agent.

37. A non-halogenated, fire retardant expandable poly(arylene ether)/polystyrene blend produced by the method comprising:

in a first step, forming a first mixture comprising poly(arylene ether) resin, polystyrene resin essentially free of plasticizer, and a non-halogenated fire retardant by intimately mixing in melt; and

in a second step forming an expandable poly(arylene ether)/polystyrene blend by intimately mixing in melt the first mixture with a blowing agent.

38. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

39. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

40. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

41. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37 wherein the fire retardant mixture further comprises a nucleating agent.

42. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37, wherein the fire retardant mixture further comprises an impact modifier.

43. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37, wherein the non-halogenated fire retardant comprises butylated triphenyl phosphate ester, resorcinol tetraphenyl diphosphate, bis-phenol A tetraphenyl diphosphate, or a mixture of two or more of the foregoing.

44. The non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend of Claim 37, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

45. A precursor composition useful in making an expandable poly(arylene ether)/polystyrene composition comprising poly(arylene ether) resin, a polystyrene resin essentially free of plasticizer and a nucleating agent.

46. The precursor composition of Claim 45 wherein the poly(arylene ether) has an intrinsic viscosity of about 0.1 to about 0.6 deciliters per gram as measured in chloroform at 25°C.

47. The precursor composition of Claim 45 wherein the poly(arylene ether) is present in an amount of about 5 to about 95 weight percent, based on the weight of the composition and the amount of polystyrene is about 5 to about 95 weight percent, based on the weight of the composition.

48. The precursor composition of Claim 45 wherein the polystyrene has a molecular weight less than or equal to about 240,000 atomic mass units.

49. The precursor composition of Claim 45, further comprising an impact modifier.

50. The precursor composition of Claim 45, wherein the blowing agent comprises a pentane isomer or a mixture of pentane isomers.

51. The precursor composition of Claim 45 further comprising a non-halogenated fire retardant.

52. A non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend produced by the method comprising:

in a first step, melt mixing independent components comprising a non-halogenated fire retardant, poly(arylene ether) resin, and a polystyrene resin essentially free of plasticizers to form a fire retardant mixture;

in a second step, forming a non-halogenated, fire retardant, expandable poly (arylene ether)/polystyrene blend by intimately mixing in melt the fire retardant mixture with a blowing agent.

53. An expandable poly(arylene ether)/polystyrene blend produced by the method comprising:

in a first step, melt mixing independent components comprising poly(arylene ether) resin and polystyrene resin essentially free of plasticizer by intimately mixing to form a first mixture; and

in a second step forming an expandable poly(arylene ether)/polystyrene blend by intimately mixing in melt the first mixture with a blowing agent.